



AF/3724/8

#17

Patent

HM-349

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Horst Grafe, et al.
Serial No: 09/623,584
Filed: December 4, 2000
For: HIGH SPEED SHEARING MACHINE FOR HOT CUTTING OF
BAND IRON
Examiner: Boyer Dolinger Ashley
Art Unit: 3724

Mail Stop: Appeal Brief
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

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TECHNOLOGY CENTER R3700

SUBMISSION OF BRIEF ON APPEAL

SIR:

Submitted herewith is a Brief On Appeal in triplicate in support of the appeal filed December 9, 2003.

A check in the amount of \$ 330.00 to cover the appeal fee pursuant to 37 CFR §1.17 (f) is enclosed.

Any additional fees or charges required at this time in connection with the application may be charged to Patent and Trademark Office Deposit Account No. 11-1835.

Respectfully submitted,

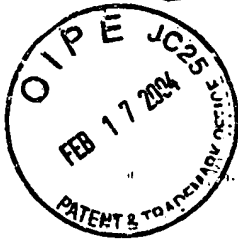
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Dated: February 10, 2004
Encls: Check \$330.00

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on February 10, 2004.

By: *F. Kueffner* Date: February 10, 2004
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BRIEF ON APPEAL

S I R:

This appeal is taken from the Final Action mailed July 1,
2003.

Void date: 02/20/2004 SZEWDIE1
02/20/2004 SZEWDIE1 00000103 09623584
01 FC:1452 -110.00-OP

Real Party in Interest

02/20/2004 SZEWDIE1 00000103 09623584
01 FC:1452 -110.00-OP

02/20/2004 SZEWDIE1 00000104 09623584

01 FC:1402 330.00 OP

The real party in interest in the above-identified application is:

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Related Appeals and Interferences

There are no related appeals or interferences of which Applicants are aware regarding the above-identified application.

Status of Claims

Claims 1-13 have been canceled. Claims 23-26 and 28 have been withdrawn. Claims 14-21 and 27 are pending and subject to the present appeal. Claims 14-16, 18-19 and 21 stand rejected by the Examiner under 35 U.S.C. 102(b) over Foreign Document 2718793 (FD '793). Claims 17 and 20 are rejected under 35 U.S.C. 103(a) over FD '793.

Status of Amendments After Final Rejection

An amendment after final rejection was filed and entered upon the filing of the present appeal.

Summary of the Invention

The claimed invention recites flying shears 1 for cutting strip 9. The flying shears 1 comprise drums 2,3 facing each other, cutting tools 6,7 mounted on the drums 2,3, at least one driving device 8 for accelerating the cutting tools 6,7 to a peripheral speed corresponding to a speed of the strip 9, and a separately controllable adjusting device for one of the drums. One of the drums is mounted on rockers 4. (See Fig. 1, page 1, lines 19-20 and page 3, line 23- page 4, line 4 of the application). The adjusting device is comprised of drives 12,13 for effecting a cutting movement and support elements 10 for the rockers 4. The support elements 10 are shortenable to an effective position for effecting cuts. (See Fig. 1, page 1, lines 20-23 and page 3, line 23- page 4, line 4). The foregoing is covered in independent claim 14.

Claim 15 depends from claim 14, and further limits the same by defining the support elements 10 to be mounted between the drives 12,13 for effecting the cutting movement and the rockers 4. (See Fig. 1 and page 1, line 21-22).

Claim 16 depends from claim 14, and further limits the same by defining the support elements 10 to have an effective length which is lockable. (See page 2, lines 23-24 and page 4, lines 1-3).

Claim 17 depends from claim 14, and further limits the same by defining the drives 12,13 to comprise a crank 12. (See Fig. 1 and page 4, lines 3-4).

Claim 18 depends from claim 14, and further limits the same by defining the drives to be configured as a piston-cylinder unit 16. (See Fig. 2 and page 4, lines 23-25).

Claim 19 depends from claim 14, and further limits the same by adding synchronization means 14,14' between the driving devices 8 and the drives 12,13. (See Fig. 1, page 2, lines 31-32, page 3, lines 28-29 and page 4, lines 11-12).

Claim 20 depends from claim 14, and further limits the same by defining the cutting tools 6,7 to comprise a chisel 6 mounted on one of the drums 2 and a jacket area acting as an anvil 7 on another of the drums 3. (See Fig. 1, page 2, line 29 and page 3, lines 1-2 and 25-26).

Claim 21 depends from claim 14, and further limits the same by defining that the support elements 10 are configured to be moved into an effective position thereof before a working stroke of the drive 12,13 begins. (See Fig. 1 and page 3, lines 3-7).

Claim 27 depends from claim 14, and further limits the same by defining the flying shears to be an integral part of a coiler 18-20. (See Fig. 4 and page 5, lines 18-20).

Issues

The following issues are presented for review:

Whether claims 14-16, 18-19 and 21 are anticipated under 35 U.S.C. 102(b) by Foreign Document 2718793 (FD '793).

Whether claims 17 and 20 are unpatentable under 35 U.S.C. 103(a) over FD '793.

Grouping of Claims

Claims 14-21 and 27 stand or fall together.

Argument

Claims 18 and 27:

In the final rejection the Examiner made some formal objections to the claims. Since the Examiner did not mention these objections in the Advisory Action applicant assumes that they have been overcome and withdrawn based upon the amendment after final.

The Examiner did not specify a basis for rejecting claim 27. Thus, the applicant will assume that this claim is allowable by itself or at the very least is allowable based upon the arguments that follow relative to independent claim 14.

The Rejections of Claims 14-21:

In rejecting claims 14-16, 18-19 and 21, the Examiner stated the following when rejecting the claims as being clearly anticipated by FD '793:

"FD '793 discloses the same invention as claimed as set forth in paragraph 13 of paper number 9 and as further explained here. Moreover, as the previous rejection stated the above is only one example, the FD '793 can anticipate other interpretations of the claims by using element 36 as one of the drives. Therefore, drive 36 effects, or influences, the cutting movements by adjusting for the thickness of the workpiece while drive 49 effects the support elements (the piston and link 48) for the rockers (45/47), wherein the support elements are shortenable (for example, the support element, i.e. the piston has a length that is adjustable in and out of the drive 49 while support element, i.e. link 48) is has a length that is adjustable by rotating in and out of vertical alignment with link 47."

In paragraph 13 of paper 9, the Examiner stated:

"FD '793 discloses the same invention as claimed including, for example: drums (39,40) with cutting tools (37/38); at least one driving device (103/108) for accelerating the cutting tools to a peripheral speed corresponding to a speed of the workpiece; a separately controllable adjusting device (49/48/47/45/44) for one of the drums and is mounted on a rocker (45), said adjusting device comprising a drive (49) for effecting a cutting movement and support elements (the piston rod 49) for the rockers that are shortenable."

In rejecting claim 17, in paper 9, paragraph 15 the Examiner stated:

"FD '793 discloses the claimed invention except for the drive comprising a crank. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a crank for the purpose of controlling the drum where electrically energy is only available because the examiner takes Official Notice of the equivalence of hydraulic cylinder and cranks for their use in the tool translation art and the selection of any of these known equivalents to translate a tool would be within the level of ordinary skill in the art."

In rejecting claim 20, in paper 9, paragraph 16 the Examiner stated:

"FD '793 discloses the claimed invention except for jacket area as an anvil; however, the examiner official notice that it is old and well known in the art to use jacket areas for anvils instead of cooperating chisel for the purpose of extending the area that the cooperating knife can engage the anvil. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use a jacket area as an anvil instead of another chisel tool in order to increase the anvil area that is engageable with the chisel."

The German reference FD '793 corresponds to U.S. Patent No. 4,141,266 and is directed to a flying drum shear for cutting the front and rear crop end of a prerolled strip in a roughing mill prior to rolling in a finishing stand. The speeds of the strip in roughing mills are very low. For this reason, the flying shear according to the reference can only operate slowly and, because of the large thickness of the prerolled hot strip, the shear is of very heavy construction. High-speed cuts cannot be carried out with this shear.

The shears of the reference have two shear or blade drums that are arranged relative to one another so that with each rotation a cut takes place. Thus, the blade is accelerated when the strip engages the blade, makes its first cut and is then stopped again. Only when the next cut is necessary is the blade again accelerated for cutting.

In the shear according to the reference, the upper shear drum comprises bearing chucks which are guided essentially vertically in a stand. The bearing chucks are driven in vertical direction through a lever device and an angle drive. This configuration allows only very slow cuts with the application of a great force. The reference does not teach constant driving of the drums at a peripheral speed corresponding to the strip speed, as in the present invention. The reference, in the paragraph beginning on line 5 of page 11 (corresponding to the paragraph beginning on column 4, line 38 of U.S. Patent No. 4,141,266) states that when the strip reaches a certain speed into the flying shear the drums are actuated. This is always undertaken with the strip from 40-80 mm in thickness (see col. 1, lines 35-36 of '266, and page 5, lines 3-4 of FD '793). The paragraph

beginning on line 45 of column 4 of '266 and the paragraph beginning on line 10 of page 11 of FD '793 state that the blades move along a circular path and start the shearing of the hot strip. This type of shearing forms needle-like burrs, which can lead to flaws in the surface of the strip. In FD '793, the blades move further along the circular path to avoid producing these burrs. This further movement takes place depending upon the position of the blade via a cam projection 41 and the sensors 50. This is described in the paragraph beginning on line 55 of column 4 of the '266 patent and the paragraph beginning on line 20 of page 11 of FD '793. From this description it is believed clear that the reference discloses a toggle drive.

The present invention, on the other hand, is directed to a high speed shear which is arranged at the end of a finishing train. In order to make it unnecessary to accelerate large masses, as it is the case, for example, in the German reference relied on by the Examiner and also in German application OS 41 28 970, one of the two drums of the shear is arranged between two rockers. Before the cut is carried out, each rocker is adjusted by shortening the respective support element to an effective position in which the cuts can be carried out appropriately.

Subsequently, another drive, either the crank drive 12 or the piston-cylinder unit 16, carries out the cutting movement.

The German reference only discloses a single drive through which the cutting movement is carried out. In the reference, the drum is driven through a lever-type drive which is activated by a cylinder and actuates a lever. Because of the large masses involved, rapid cuts are not required.

In summary, in contrast to the present invention as claimed, the shear of the reference relied on by the Examiner is intended for slow cuts and discloses only a single drive for affecting the cutting movement.

When the present invention is compared with FD '793 there are several differences. In FD '793, for cutting, the blade is driven and then stopped. In the present invention, on the other hand, the blades are driven continuously at a peripheral speed that corresponds with the speed of the strip to be cut. Furthermore, the blades in the reference are mounted in blade stands so as to be at an angle to the strip. Such a construction has nothing to do with a rocker construction as in the presently

claimed invention. The toggle drive of the reference is more correctly comparable to the support element 10 of the present invention, not the rocker.

The cutting device according to the present invention, on the other hand, is intended for rapidly carried out cuts and, therefore, has small masses. In addition, the device according to the present invention includes two drives which are actuated successively in order to carry out a cut. First, the support elements are shortened to an effective position for effecting cuts and subsequently the drive 12, 13 or the drive 16 in the support element 10 carries out the cutting movement.

Based upon the above considerations it is submitted that FD '793 does not disclose the construction of the claimed invention.

Conclusion

Accordingly, in view of the above considerations, it is Applicant's position that the Examiner's rejection of claims 14-16, 18-19 and 21 under 35 U.S.C. 102(b), and the rejections of

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claims 17 and 20 under 35 U.S.C. 103(a) over FD '793 are in error and should be reversed.

A check in the amount of \$330.00 to cover the fee for filing an appeal brief is enclosed. Any additional fees or charges required at this time in connection with this application may be charged to Patent and Trademark Office Deposit Account No. 11-1835.

Respectfully submitted,

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Dated: February 10, 2004

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, PO Box 1450 Alexandria, VA 22313-1450, on February 10, 2004.

By: *F. Kueffner*

Friedrich Kueffner

Date: February 10, 2004

Appendix

Claim 14 Flying shears for cutting strip, the flying shears comprising drums facing each other, cutting tools mounted on the drums, at least one driving device for accelerating the cutting tools to a peripheral speed corresponding to a speed of the strip, and a separately controllable adjusting device for one of the drums, wherein one of the drums is mounted on rockers, wherein the adjusting device is comprised of drives for effecting [the] a cutting movement and support elements for the rockers, wherein the support elements are shortenable to an effective position for effecting cuts.

15. The flying shears according to claim 14, wherein the support elements are mounted between the drives for effecting the cutting movement and the rockers.

16. The flying shears according to claim 14, wherein the support elements have an effective length which is lockable.

17. The flying shears according to claim 14, wherein the drives comprise a crank.

18. The flying shears according to claim 14, wherein the drives are configured as a piston-cylinder unit.

19. The flying shears according to claim 14, comprising synchronization means between the driving devices and the drives.

20. The flying shears according to claim 14, wherein the cutting tools comprise a chisel mounted on one of the drums and a jacket area acting as an anvil on another of the drums.

21. The flying shears according to claim 14, wherein the support elements are configured to be moved into an effective position thereof before a working stroke of the drive begins.

27. The flying shears according to claim 14, wherein the flying shears are an integral part of a coiler.